Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form

1. Applying for (select one):	☒ (a) Prop 13 Urban Water Conservation Capital Outlay Grant ☐ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant ☐ (c) DWR Water Use Efficiency Project	
2. Principal applicant (Organization or affiliation):		Regional Water Authority, Sacramento, California
3. Project Title:		Large Landscape Irrigation System Incentive Program
4. Person authorized to sign and submit proposal:	Name, title	Edward Winkler, Executive Director
	Mailing address	5620 Birdcage Street, Suite 180 Citrus Heights, CA 95610
	Telephone	(916) 967-7692
	Fax.	(916) 967-7322
	E-mail	edwinkler@concourse.net
5. Contact person (if different):	Name, title.	Charlie Pike, Regional Water Efficiency Manager
	Mailing address.	5620 Birdcage Street, Suite 180 Citrus Heights, CA 95610
	Telephone	(916) 967-7692
	Fax.	(916) 967-7322
	E-mail	cpike@concourse.net
6. Funds requested (dollar amount):		$322,500 (Table D-1)
7. Applicant funds pledged (dollar amount):		$37,500 (Table D-1)
8. Total project costs (dollar amount):		$360,000 (Table D-1)
9. Estimated total quantifiable project benefits (dollar amount):		$642,933 (Discounted to 2001 dollars, Table D-4)
Percentage of benefit to be accrued by applicant:		100% of the avoided costs benefit
Percentage of benefit to be accrued by CALFED or others:		100% of the avoided costs benefit

Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)

10. Estimated annual amount of water to be saved (acre-feet): 392 acre-feet

Estimated total amount of water to be saved (acre-feet): 7,406 acre-feet

Over 20 years 7,406 acre-feet

Estimated benefits to be realized in terms of water quality, instream flow, other: Dry year increase, instream flows, system reliability

11. Duration of project (month/year to month/year): November 2002 through June 2005

12. State Assembly District where the project is to be conducted: 4, 5, 9 and 10

13. State Senate District where the project is to be conducted: 1, 4, 5 and 6

14. Congressional district(s) where the project is to be conducted: 3, 4, 5 and 11

15. County where the project is to be conducted: Sacramento and Placer County

16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources: See attached list for cooperating water suppliers in Table A-1

17. Type of applicant (select one):
Prop 13 Urban Grants and Prop 13 Agricultural Feasibility Study Grants:

- ☐ (a) city
- ☐ (b) county
- ☐ (c) city and county
- ☒ (d) joint power authority
- ☐ (e) other political subdivision of the State, including public water district
- ☐ (f) incorporated mutual water company

DWR WUE Projects: the above entities (a) through (f) or:

- ☐ (g) investor-owned utility
- ☐ (h) non-profit organization
- ☐ (i) tribe
- ☐ (j) university
- ☐ (k) state agency
- ☐ (l) federal agency

18. Project focus:

- ☐ (a) agricultural
- ☒ (b) urban

Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)

19. Project type (select one):
Prop 13 Urban Grant or Prop 13 Agricultural Feasibility Study Grant capital outlay project related to:

- ☒ (a) implementation of Urban Best Management Practices
- ☐ (b) implementation of Agricultural Efficient Water Management Practices
- ☐ (c) implementation of Quantifiable Objectives (include QO number(s)

  _____
- ☐ (d) other (specify)

  _____

DWR WUE Project related to:

- ☐ (e) implementation of Urban Best Management Practices
- ☐ (f) implementation of Agricultural Efficient Water Management Practices
- ☐ (g) implementation of Quantifiable Objectives (include QO number(s))
- ☐ (h) innovative projects (initial investigation of new technologies, methodologies, approaches, or institutional frameworks)
- ☐ (i) research or pilot projects
- ☐ (j) education or public information programs
- ☐ (k) other (specify)

  _____

20. Do the actions in this proposal involve physical changes in land use, or potential future changes in land use?

- ☐ (a) yes
- ☒ (b) no

If yes, the applicant must complete the CALFED PSP Land Use Checklist found at http://calfed.water.ca.gov/environmental_docs.html and submit it with the proposal.

Table A-1. List of Cooperating Water Suppliers and UWMP Submittals

Regional Water Efficiency Participants	Urban Water Management Plan Date	Listed by DWR as Received by Nov. 2001
Carmichael Water District	Dec-01	
Citrus Heights Water District	Dec-00	Yes
City of Folsom	May-01	Yes
City of Sacramento/Dept. of Utilities	Dec-01	
FRCD/Elk Grove Water System		Yes
Fair Oaks Water District	Jun-01	Yes
Orange Vale Water Company	Nov-00	Yes
Placer County Water Agency	Dec-00	Yes
Rio Linda/Elverta Water District	Feb-02	
San Juan Water District	Dec-00	Yes

Consolidated Water Use Efficiency 2002 PSP
Proposal Part One
B. Signature Page

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant; and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

Signature	Name and title	Date
E D Winkler	Edward D. Winkler Executive Director	2/28/02

PROPOSAL PART TWO

PROJECT SUMMARY

The project consists of providing financial incentive for irrigation system retrofits for large landscape sites located within the metropolitan region of Sacramento, California. Eligible sites for the incentives are landscape accounts that have had site audits with a water budget developed. Note this project will build on landscape audits and water budgets currently being completed under an already funded grant by the United States Bureau of Reclamation (USBR). This project will be regionally administered through the Regional Water Authority in Sacramento, California to enable 50 site owners to receive direct financial assistance in the form of a two-part incentive to purchase irrigation system equipment. Ten (10) retail agencies, all members of the Regional Water Authority, will participate in this program as external cooperators to have a minimum of 5 sites within their respective service areas receive financial incentives.

External cooperating water agencies for this project are:
Carmichael Water District
Citrus Heights Water District
City of Folsom
City of Sacramento
Florin Resource Conservation District/Elk Grove Water System
Fair Oaks Water District
Orange Vale Water Company
Placer County Water Agency
Rio Linda/Elverta WD
San Juan Water District

The efficient use of California's limited water supplies is a critical local, regional, and statewide water issue. The Regional Water Authority assists 18 member water suppliers serving more 726,000 acre-feet of water per year to more than 1.2 million people. These retail water suppliers utilize both surface water from the Sacramento River and American River and groundwater as part of their water supply. Figure 1 depicts the location of service area of the Regional Water Authority member agencies.

The project cost is $360,000 including local agencies' contribution. The total proposed grant amount is $322,500. This project can be considered scalable but not separable as described in Section B.2 of the application. It is expected that twenty-five (25) percent of the on-site consumptive water use during the summer peak irrigation period will be conserved through the replacement of **fifty (50)** irrigation systems. It is assumed that the irrigable area for these systems average 4.75 acres and have an average consumptive water use of 6.6 acre-ft/acre per 5-month summer period (May through October). This project will result in total annual average water savings of **392 ac-ft/year**, or **7,406 ac-ft** over a 20-year period.

A. SCOPE OF WORK: RELEVANCE AND IMPORTANCE

This section describes the nature, scope, and objectives of the project. It also includes a statement of critical local, regional, Bay-Delta, State and federal water issues and a description of how this

project is consistent with local and regional water management plans and other resource management plans.

A.1 Nature, Scope, and Objectives of the Project

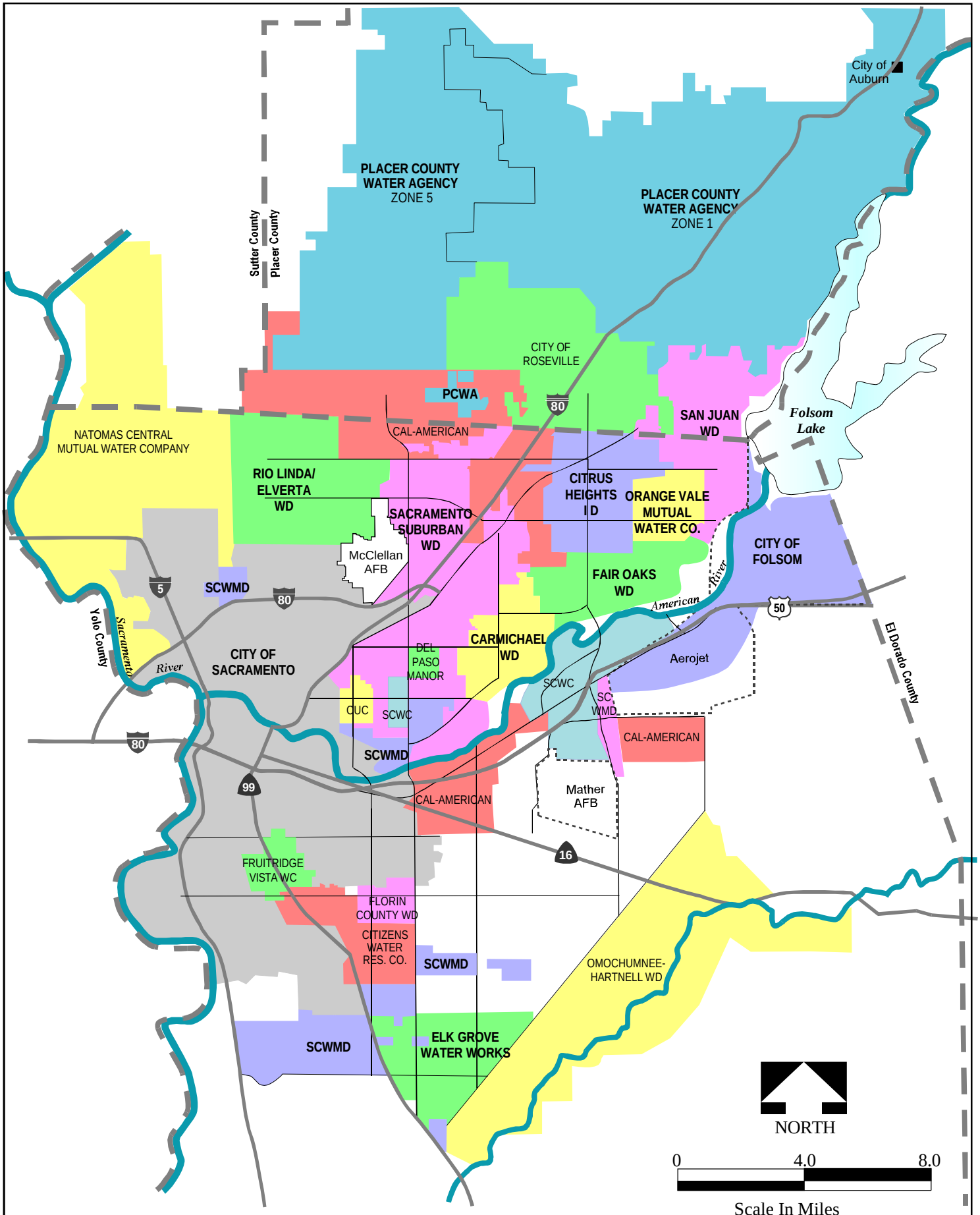
The overall goal of this project is the reduction of peak summer consumptive water use for irrigating large landscaped areas in the Sacramento area. Currently, the retail water agencies within the Sacramento area are undergoing the conversion to water meters including dedicated irrigation meters. The conversion of these newly metered customers to a water billing rate structure based on their individual metered use from a flat-rate structure is causing these customers to take note of their water use, particularly higher summer water use for outdoor irrigation. While there is some relative cost savings to the customer from water savings on their water bill, the upgrade of an irrigation system is a capital-intensive project for the customer. It has been shown in other service areas in northern California, such as the East Bay Municipal Water District that with assistance through an incentive from the water utility, that customers are sufficiently motivated to upgrade their irrigation system equipment.

The objective of this project is to provide incentive funding to the owners of sites that qualify for replacement of their irrigation system given that the site has been audited under the pre-existing large landscape audit program currently underway and due for completion in December 2002. That site audit program funded under a USBR funded grant and by local agencies, has no provisions for funding financial incentives to site owners, which is the sole objective of this project. Thus, goal of this project is to build on information gained during the site audits. With the incentive provided by water utilities, site owners can implement the recommended upgrades for their irrigation systems uncovered in the site audits. The Regional Water Authority will administer rebates to 50 sites over a three-year time frame.

The rebate program will be regionally administered through the Regional Water Authority providing all administrative duties associated with the grant from DWR and the retail agencies covering the administrative costs of providing the rebate to the customer. Work for this project will be conducted in-house by water agency staff. This project will not include contracting out the regional administration of the grant, unless retail agencies specifically request the additional assistance in lieu of receiving administrative funding.

A.2 Statement of Issues, Project Need, and Project Consistency

The efficient use of California's limited water supplies is a critical local, regional, and statewide water issue. The water supply for the retail agencies participating in this project comes partially or wholly from the Sacramento River and/or American River in addition to local groundwater supplies. The purpose of this project is to significantly increase water use efficiency by reducing the amount of peak summer demand that is particularly critical in dry-years. This project will provide benefit to the Bay-Delta by ensuring that water diverted upstream is used efficiently. An important objective of the Water Forum Agreement is for signatory water suppliers to reduce diversions from the Lower American River during critical dry years, so that flows may be maintained for aquatic life.



DATE	2-28-02	PROJECT	22388	SITE	DWR WUE Grant Application	FIGURE
BROWN AND CALDWELL				TITLE	Area Water Suppliers	1

This project will positively impact the Bay-Delta systems by increasing instream flows and reducing the overall reliance on the surface water supplies from the American and Sacramento Rivers upstream from the Bay-Delta. The RWA's and its member agencies' conservation efforts are an important part of a long-term, comprehensive effort to reduce pressure on the Bay-Delta system to meet regional and state-wide water needs. One of the fundamental objectives of the CALFED Bay-Delta program is to reduce the mismatch between Bay-Delta water supplies and the current and projected beneficial uses dependent on the Bay-Delta system. Water use efficiency projects are one of the cornerstone strategies the CALFED Bay-Delta program is deploying to achieve this objective. Actual incentives for the purchase of efficient irrigation system equipment will reduce the demand for a significant urban end-use of Bay-Delta water supplies. It is anticipated that the 50 irrigation system equipment purchase incentives issued under this project will result in water savings of approximately 392 acre-feet per year and a total of 7,406 acre-feet by 2023.

By reducing the amount of water use by customers in the agencies' water supply areas, other beneficial uses will be realized during the critical summer months, such as providing flow to improve aquatic ecosystems and the habitat of many Federally listed species including: Delta Smelt, Splittail, Steelhead, Chinook salmon, fresh water shrimp, Coho salmon, and Steelhead along the American River and Lower Sacramento River watersheds.

The Regional Water Authority is a joint powers agency of 18 water suppliers serving more than 1 million people in the greater Sacramento Region. The mission is to serve and represent regional water supply interests and assist RWA members with protecting and enhancing the reliability, availability, affordability and quality of water resources.

A major component of RWA, the Regional Water Efficiency Program is designed to expand measures to help area water providers fulfill Water Forum best management practices (BMPs). The Regional Water Efficiency Program offers two tiers of services: Core activities serve as the fundamental building blocks necessary for implementing the BMPs and includes public information, school education, program marketing coordination, grant applications and technical assistance.

In addition, agencies can choose from subscription activities according to organizational and customer needs. These can include landscape irrigation surveys, marketing partnerships with landscape retailers, training for staff and customers, pilot projects, leak detection surveys and report preparation.

The Regional Water Authority and its member agencies are stakeholders in three major water management teams: Sacramento Area Water Forum (Water Forum), the American River Basin Cooperating Agencies (ARBCA), and the Sacramento Groundwater Authority (SGA). The project is consistent with the local water management plans including the SGA. This project is consistent with regional water management plans such as the ARBCA Regional Water Master Plan (RWMP) and Water Forum Agreement. This project is also consistent with statewide water management plans such as the California Urban Water Conservation Council's Memorandum of Understanding regarding Urban Water Conservation in California.

This project is compatible with each of this project's cooperating agencies' 2000 UWMP and RWA's ongoing efforts to achieve greater water use efficiency. RWA's Board of Directors recognizes the importance of water management and conservation programs. RWA's has the general policy that states in part that the RWA will supports its member agencies in operating and maintaining each

individual purveyor's water system in an efficient and economical manner and distribute and supply water as fairly and equitably as possible.

All of the retail agencies that are external cooperating agencies are members of the Sacramento Water Forum.

In the year 2000, the Water Forum finalized the *Water Forum Agreement* (Agreement) which contains seven major elements to meet its objectives. Water conservation is the fifth major element in the Agreement. The water conservation portion of the Agreement describes each water purveyor's commitments to implement BMPs. These BMPs were derived from the original MOU developed by the CUWCC, and then customized for the Water Forum conservation agreements prepared for the individual purveyors.

This project involves the implementation of urban water conservation best management practice (BMP) number 5, *Large Landscape Program*, as originally defined by the California Urban Water Conservation Council (CUWCC). The unpredictable water supply and ever increasing demand on California's complex water resources have resulted in a coordinated effort by the California Department of Water Resources (DWR), water utilities, environmental organizations, and other interested groups to develop a list of urban BMPs for conserving water. This consensus-building effort resulted in the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), which formalizes an agreement to implement these BMPs and makes a cooperative effort to reduce the consumption of California's water resources.

One of the Water Forum Agreement BMPs, Large Landscape Audits and Incentives for Commercial, Industrial, Institutional (CII) and Irrigation Accounts, BMP 5, further defines the goals for large landscape audits beyond the definition within the CUWCC MOU. Thus, there is project is not considered an accelerated project as defined by DWR, but rather an extension to assist with implementation by the customer to achieve water savings. This project does not include implementing work considered a part of the requirements under the Water Forum Agreement BMP 5, Large Landscape Audits and Incentives for Commercial, Industrial, Institutional (CII) and Irrigation Accounts.

The Regional Water Authority member agencies serve approximately 1.3 million customers. The RWA incentive program will be modeled after the East Bay Municipal Utility District's successful program. EBMUD serves a similar customer base of 1.2 million customers in a 325 square mile area and had an irrigation rebate program which provided forty-seven (47) rebates in FY2000 alone for a total of $141,311 with an average rebate amount of $3,007. The average consumption of these landscape irrigation accounts was 14, 559 gallon per day (gpd) or 16.2 acre-ft per acre per year. The rebates were given for upgrades to irrigation systems, such as computerized central control systems, improved sprinkler head spacing, and installation of individually controlled "value-in-head" sprinklers. Customers included three (3) golf courses, numerous homeowner associations, and the Castro Valley Union School District. In the EMBUD program, half of the rebates are paid at the end of the project and the remaining half paid after 12 months of demonstrated water use efficiency based on a site-specific water budget or efficiency standard and comparing to actual use to the recommended budget amount. (EBMUD, Water Conservation Division, FY00 Annual Report, 2001).

This project is cost effective relative to savings in production and operating costs as shown in Section D of this application. Even though this project proves to be locally cost effective, agencies need grants for seemingly cost effective projects. The substantiation that a project is cost effective is not enough to get project approval, since project managers and engineers must compete for available utility dollars. There is seldom enough money to serve all of the needs. Regulatory issues often take priority, such as: monitoring water quality for an ever-broadening list and lowering detectable levels of constituents of concern; meter installation commitments (in the Sacramento region); and keeping up with new building development. In the private sector, the competition might use return-on-investment analysis where paybacks of 1-2 years receive budget allocations, but paybacks of more than 5 years seldom are considered for funding. Water efficiency measures, while meaningful investments, often have much longer paybacks.

B. SCOPE OF WORK: TECHNICAL/SCIENTIFIC MERIT, FEASIBILITY, MONITORING AND ASSESSMENT

This section describes the methods, procedures and facilities associated with the project. A task list and schedule and quarterly expenditure of the project are also included in this section.

B.1 Methods, Procedures, and Facilities

This project is a regional approach to provide financial incentive towards the purchase and installation of efficient irrigation systems. The costs of the project primarily involve the agency match share and the RWA administrative costs to implement the three year program. Approximately 50 rebates will be issued over the two-year period for 2002-2003 and 2004.

The scope of this project consists of ten primary steps to be performed by RWA in conjunction with the member agency staff:

1. Continue to perform landscape audits.
2. Identify potential candidate sites and prioritize sites for potential incentives.
3. Contact site owner
4. Review submission for incentive funding
5. Approve payment and notify customer of incentive amount and procedures for collection.
6. Inspect site to ensure project installation.
7. Final approval for 50% payment of incentive for equipment installation.
8. Review irrigation account data prior to and post equipment installation.
9. Verify water savings based on irrigation account metered data for the following 5-month irrigation season (either 2003 or 2004) after inspection and initial award approved.
10. Approve remaining 50% payment of incentive to customer, assuming water savings meet program requirements.

The RWA will use standard administrative procedures to implement this regional incentive program. Although not explicitly called for in this project, work will be performed by in-house agency staff. Due to the heterogeneity and liability with utility purchasing and installing irrigation system equipment on customer's facilities, it is foreseen that the most economical and feasible means for implementation of irrigation system upgrades is through an incentive program. Thus, since agencies do not require their standard purchasing and contracting procedures to purchase any items or

installation of any systems. This project also does not require the purchase of land or easements, design, engineering, or encroachment permits.

For this project, RWA will have a formal written agreement with the participating utilities. RWA will have one designated project manager and each member agency will assign one designated landscape program contact for the administration of the project within their service area. The RWA project manager is responsible for the overall conduct of the project.

The RWA project manager will be responsible for ensuring that each member agency fulfills its commitment to audit the large landscape site and implement the rebate to qualified sites under the stipulations of the RWA directed regional irrigation rebate project guidelines. The retail water agency staff will, or alternatively the RWA staff may elect to, inspect rebate recipients to ensure irrigation systems are upgraded as indicated in the application.

B.2 Task List and Schedule

The tasks for implementation of this project and the project schedule are described below and presented on Figure 2. The schedule includes deliverable items, due dates, and projected costs for each task. The schedule bar chart also identifies which tasks are considered to be inseparable if only a portion of the project is funded. The project may be considered scalable to the minimum number of thirty (30) customer incentives (for 3 rebates per participating agency) before it's considered too administratively costly for implementation. The RWA would be willing to commitment to a maximum of 100 customer incentives or an increase in the maximum dollar amounts above the $5,000. Table B-1 presents a quarterly expenditure projection.

Tasks

1. Develop action plan per agency of a short-list of priority sites to target based on site audit information. Site audits are not considered a part of this project but are a necessary prerequisite to the work to be performed under this project.

2. Contact site owners and discuss possibilities for efficient irrigation system equipment purchase and installation according to recommendations from the site audits.

3. Initiate Phase I: review applications and irrigation system design plans, approve application, inspect installation of equipment, initiate first 70% of the reimbursement payments upon receipt of documentation from customer, review data for pre-installation and 12 month post installation to verify savings, approve remaining reimbursement.

4. Prepare Interim Progress Report after completion of Phase I with goal of 35 incentives approved.

5. Initiate Phase II: revise project goals of 15 incentives if necessary based on outcomes of Interim Progress Report, otherwise proceed with project as outlined in Task 3 (review applications and irrigation system design plans, approve application, inspect installation of equipment, initiate remaining 30% of the reimbursement payments upon receipt of

documentation from customer, review data for pre-installation and 12 month post installation to verify savings, approve remaining reimbursement).

6. Prepare Final Report for both Phase I and II.

7. Monitoring and Assessment Report. This report will be written following the end of the project for submission to DWR regarding the total project outcomes. It will include results of the irrigation system audits, incentives awarded, a summary the implementation, and the resulting water use and water savings.

Figure 2. Project Timeline

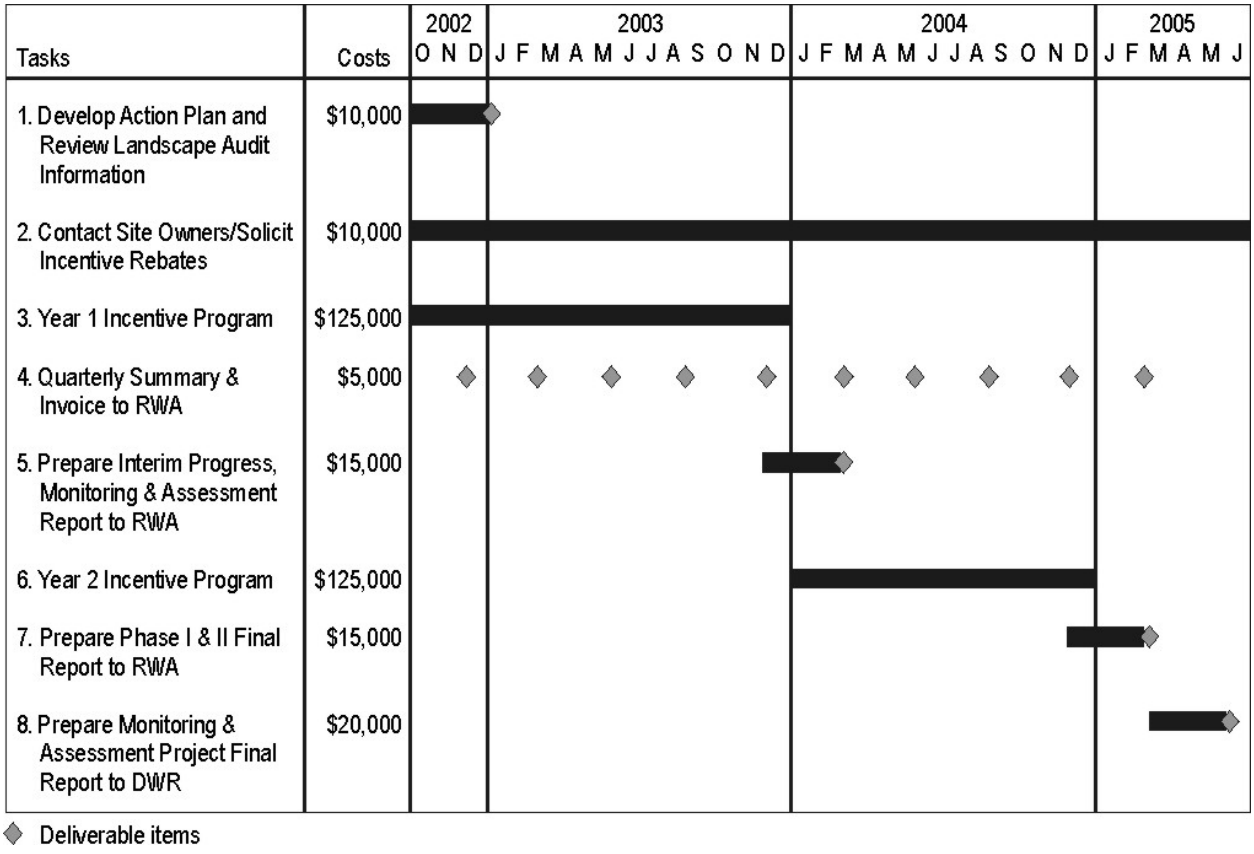


Table B-1. Quarterly Expenditure Projection

Quarter	Months	Expenditure
2002		
4	October-December	46,610
2003		
1	January-March	36,610
2	April-June	36,610
3	July-September	36,610
4	October-December	41,610
2004		
1	January-March	30,360
2	April-June	20,360
3	July-September	20,360
4	October-December	25,360
2005		
1	January-March	17,167
2	April-June	13,343
Total		325,000

Note: Total does not included project contingency.

B.3 Monitoring and Assessment. A list of project-specific performance measures that will be used to assess project success in relation to its goals is as follows:

The key performance measure is the actual water savings that are realized as a result of this project. Participating water suppliers will provide irrigation season water use data for participating customers. The data will be compared with usage date prior to irrigation system improvements and also compared to CIMIS ET data for the monitored months. RWA will determine the effectiveness of the program by the change of water use.

- One Interim Progress Report will be prepared by each member agency. This report will be a status report summarizing preliminary incentives awarded and a summary of installations and inspections conducted to date. This interim report will be used to document the progress of the project and determine if the project is on schedule and aid in project control. The progress report will be prepared the first quarter of 2004.
- One Final Report will be prepared by each member agency for submission to RWA for Phase I and II by 1st quarter 2005.
- A Monitoring and Assessment Report will be prepared by RWA following project completion during 2nd quarter 2005. This report will summarize the monitoring and assessment of the before and after water use for the individual landscape sites account data pre and post project installation.

The Interim Progress Report and the Monitoring and Assessment Report will be made available to the public at the RWA office. The information will be made available to the public through various outreach methods.

B.4 Preliminary Plans and Specifications and Certification Statements. Preliminary plans and specifications are not required under this project as proposed. Customers will submit and verify irrigation system equipment to be installed within the application subjected to the agencies for consideration.

C. QUALIFICATIONS OF THE APPLICANTS AND COOPERATORS

The qualifications of the project manager, cooperators, and partners to be involved in the financial incentive program for Regional Water Authority (RWA) are discussed in this section.

C.1 Resumes. The project manager responsible for irrigation system incentive program will be Charlie Pike, the Regional Water Efficiency Manager. Mr. Tim Crowley will serve as co-manager. Mr. Pike's and Mr. Crowley's resumes are included in Appendix B. Mr. Pike has 17 years of experience associated with administration of incentive programs.

C.2 External Cooperators. Letters of commitment are provided in Appendix C.

External cooperating water agencies for this project are:
Carmichael Water District
Citrus Heights Water District
City of Folsom
City of Sacramento
Florin Resource Conservation District/Elk Grove Water System
Fair Oaks Water District
Orange Vale Water Company
Placer County Water Agency
Rio Linda/Elverta WD
San Juan Water District

D. BENEFITS AND COSTS

This section includes a breakdown and justification of the project budget and cost sharing information. Also described and analyzed are the benefits and costs of this project.

D.1 Budget Breakdown and Justification. Table D-1 presents a detailed estimated budget that includes relevant line items for capital outlay project proposals and justification of each line item. This table also indicates the amount of cost sharing for each element.

Table D-1. Detailed Budget – Capital Outlay Project Proposal

Item	Justification	Labor		Other direct costs, dollars	Total, dollars	RWA portion	Prop 13 portion
		Hours	Dollars				
Land Purchase /Easement	Not applicable					0	0
Planning/Design/Engineering	Not applicable					0	0
Materials/Installation	$5000 per site rebate – cost includes irrigation materials and installation			250,000	250,000	0	250,000
Structures	Not applicable					0	0
Equipment Purchases/Rentals	Not applicable					0	0
Environmental Mitigation/ Enhancement	Not applicable					0	0
Construction/Administration/ Overhead	$1500 per rebate for RWA administration and overhead.			75,000	75,000	37,500	37,500
Project/Legal/License Fees	Not applicable					0	0
Contingency	To ensure sufficient funding				35,000	0	35,000
Other	Not applicable					0	0
Project Total					360,000	37,500	322,500

D.2 Cost Sharing

RWA's participating agencies are providing 10% cost sharing and RWA is thus requesting 90 percent in funding ($322,500) from the Proposition 13 Urban Water Conservation Program. Given that this is a project solely funded by the participating agency contributions ($37,500) and no additional cost recovery mechanisms are available for RWA to cover the ten (10) member agencies committed to this program, RWA requests a $35,000 contingency to ensure that funding available over the 12-month periods for the rebate program are sufficient given the contractual arrangements required by RWA bylaws, a Joint Powers Authority. Grant funded projects are structured on a subscription bases by the participating agencies. RWA bylaws prohibit the encumbrance of no-participants (even though they may be RWA members) with liabilities of subscription activities. RWA will make every effort to maintain the budget within the requested $322,500.

There are no additional funding commitments or cost sharing agreements for this project. The previously mentioned landscape irrigation audit program is a separate subscription activity, with separate funding that cannot be used in this project.

D.3 Benefit Summary and Breakdown

There are multiple expected beneficial outcomes of this project and physical changes that will occur as a result. The value of those outcomes and physical changes are both quantifiable and non-quantifiable. The quantifiable values of physical changes that will occur as a result of this project and the beneficiary of each benefit are listed in Table D-2. Project outcomes and benefits will be shared among the project's beneficiaries and will directly and indirectly contribute to CALFED goals.

Table D-2. Quantifiable Physical Changes, Expected Benefits, and Beneficiaries

Physical change	Expected benefit	Beneficiary
Reduce water use on landscape irrigation by updating irrigation systems to better match applied water to evapotranspiration needs.	392 ac-ft/year 7,406 acre-feet for 20 year project life	CALFED goal to increase instream flows water in American and Sacramento River located upstream of the Bay-Delta system. Use local water supplies more efficiently
Water agencies in this project will save money on avoided costs of a new water supply	$160/acre-foot of water saved	Water agency/customer

Non-quantifiable project outcomes and benefits are listed and described in Table D-3. It is indicated how each non-quantified outcome or benefit will be shared among the project beneficiaries. The non-quantified outcomes expected to directly or indirectly contribute to CALFED goals are also identified and delineated.

Table D-3. Non-Quantifiable Benefits

Physical change	Expected benefit	Beneficiary
Reduce consumptive water use during summer peak demand period for irrigation by watering according to efficient evapotranspiration rates with the upgraded equipment	Improved Bay-Delta ecosystem	CALFED goal
Less water pumped from wells and less water diverted from the Lower American River. In addition, more water may be available for hydropower generation at Folsom Dam and Natoma Dam.	Energy savings from reduced pumping and energy generation from hydropower production.	USBR, and local water supplier participants of RWA

D-4. Assessments of Costs and Benefits

This section includes an assessment that summarizes the costs and benefits of the proposed project. The major analysis assumptions are listed and explained. This section also shows the present value of the quantified costs and benefits to the applicant, CALFED, and other parties affected by the project and summarizes non-quantified costs and benefits to the applicant, CALFED, and other parties affected by the project.

This project is locally cost effective to the RWA. Based on the simplified benefit-cost ratio assessment in Table D-4, using project benefits and costs, the project has a benefit to cost ratio of 2.3. Since this number is greater than one, it indicates an economically justifiable project.

Below is a list and explanation of all the quantifiable benefits/costs assumptions and methodologies.

1. A total of fifty large landscape accounts will receive financial incentives to purchase landscape irrigation equipment in this project. (35 rebates will be awarded in 2003, and 15 rebates will be awarded in 2004)

2. The maximum amount of rebate awarded per site is $5,000.

3. The administration cost per site is $1,500. This is the combined cost for RWA and its ten participating member agencies to administer the rebate per each large landscape site. The cost used in the analysis does not included the contingency.

4. The average total applied water use per site is estimated as 31.4 acre-feet during the peak irrigation season. The irrigation season is assumed to be a five-month summer period occurring from May through October. Based on irrigation account metered water use data for large landscapes in the Sacramento region that ranged between 115 to 155 percent of local reference evapotranspiration for the California Irrigation Management Information System (CIMIS) from the California Department of Water Resources, Zone 14 (includes Sacramento area), it is estimated that the total average consumptive water use was 6.6 acre-feet per acre (79 inches) applied water for the 5-month irrigation season. Average Eto measured from the Fair Oaks CIMIS station is 36.7 inches for the May through October period. It is assumed that the irrigable area for these systems average 4.75 acres based on available site survey information (Appendix A).

5. Water savings from these rebates will result in 25% potential water savings. This water savings estimate is conservatively assumed based on water savings estimations in the *BMP Costs and Savings Study* (California Urban Water Conservation Council, 2000), Large Landscape Devices (particularly for central irrigation systems).

6. The effective life of the rebate is 20 years. Water savings from rebates are assumed to be 100 percent effective for the first 10 years from the administration of the rebate. Water savings are estimated to decrease 2 percent per year from the 10th to the 20th year, assuming routine operation and maintenance.

7. All quantified benefits and costs are expressed in year 2001 dollars using a 6.00 percent discount rate as required in part D.4.b and D.4.c of the Consolidated Water Use Efficiency 2002 Proposal Solicitation Package.

8. The weighted value of conserved water for the water agencies under RWA in this project is $160/ac-ft. This cost is based on the estimated surface water purchase costs and groundwater supply costs for the Sacramento Region presented in the *Economic Evaluation of Water Management Alternatives, Screening Analysis and Scenario Development,* for the CALFED Bay-Delta Program, October 1999.

An economic analysis of this project, based on the assumptions listed above is shown in Table D-4. The present values of the quantified costs and benefits for the applicant, each project beneficiary, and CALFED are quantified in Table D-5. A summary of the non-quantified costs and benefits to the applicant, each project beneficiary, and CALFED are summarized in Table D-6.

Table D-4. Economic Analysis

List of Assumptions		
No.	Assumption	
(8)	Value of conserved water ($/AF) =	160
(7)	Discount rate (real) =	6.00%
(4)	Average annual water use per site (acre-feet/year) =	31.4
(5)	Water savings =	25%
(2)	Cost of Rebate ($) =	5000
(3)	Administration cost per rebate ($) =	1500
(1)	Number of large landscape accounts awarded rebates in 2002 =	0
(1)	Number of large landscape accounts awarded rebates in 2003 =	35
(1)	Number of large landscape accounts awarded rebates in 2004 =	15

				Benefits ($)					Costs ($)				
Calendar Year	Rebates Awarded	Incremental Water Savings (AF/yr)	Annual Water Savings (AF/yr)	Avoided Capital Costs	Avoided Variable Costs	Avoided Purchase Costs	Total Undiscounted Benefits	Total Discounted Benefits	Capital Costs	Financial Incentives	Operating Expenses	Total Undiscounted Costs	Total Discounted Costs
Assumptions(1)		(4)			(8)		(8)	(7),(8)		(2)	(3)	(2),(3)	(2)(3)(7)
2002	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	35	274	274	0	43,890	0	43,890	39,062	0	175,000	52,500	227,500	202,474
2004	15	118	392	0	62,700	0	62,700	52,644	0	75,000	22,500	97,500	81,863
2005		0	392	0	62,700	0	62,700	49,664	0	0	0	0	0
2006		0	392	0	62,700	0	62,700	46,853	0	0	0	0	0
2007		0	392	0	62,700	0	62,700	44,201	0	0	0	0	0
2008		0	392	0	62,700	0	62,700	41,699	0	0	0	0	0
2009		0	392	0	62,700	0	62,700	39,339	0	0	0	0	0
2010		0	392	0	62,700	0	62,700	37,112	0	0	0	0	0
2011		0	392	0	62,700	0	62,700	35,011	0	0	0	0	0
2012		0	392	0	62,700	0	62,700	33,030	0	0	0	0	0
2013		0	386	0	61,822	0	61,822	30,724	0	0	0	0	0
2014		0	379	0	60,568	0	60,568	28,397	0	0	0	0	0
2015		0	371	0	59,314	0	59,314	26,235	0	0	0	0	0
2016		0	363	0	58,060	0	58,060	24,226	0	0	0	0	0
2017		0	355	0	56,806	0	56,806	22,362	0	0	0	0	0
2018		0	347	0	55,552	0	55,552	20,630	0	0	0	0	0
2019		0	339	0	54,298	0	54,298	19,023	0	0	0	0	0
2020		0	332	0	53,044	0	53,044	17,532	0	0	0	0	0
2021		0	324	0	51,790	0	51,790	16,148	0	0	0	0	0
2022		0	316	0	50,536	0	50,536	14,865	0	0	0	0	0
2023		0	94	0	15,048	0	15,048	4,176	0	0	0	0	0
Totals:	50	392	7,406	0	1,185,030	0	1,185,030	642,933	0	250,000	75,000	325,000	284,337
												Benefit cost ratio:	**2.3**

Note: 1. 100 percent water efficiency life of rebates is assumed to be 10 years at which time, water savings decrease by two percent per year for the following 10 years.

2.Cost does not include contingency.

Table D-5. Summary of Quantifiable Present Value Costs and Benefits

	Costs, dollars	Benefits (20-yr effective project life)	
		Water, dollars*	Water, ac-ft
RWA	$284,337	$642,933	7,406
CALFED	None	None	7,406

*Assumed $160 per acre-foot marginal cost of water.

Table D-6. Summary of Non-quantifiable Costs and Benefits

	Non-quantified costs	Non-quantified benefits
RWA Agencies	None	• Increased water supply reliability
CALFED	None	• Increased instream flows during summer peak irrigation season and dry-years • Increased water supply reliability to water users while at the same time assuring the availability of sufficient water to meet fishery protection and restoration recovery needs • More water for Bay-Delta water quality improvements and aquatic ecosystems
Energy provider	None	• Energy savings as a result of less water pumped into the system.
Groundwater Basin	None	• Decreased overdraft and improved water quality • Increased flexibility in dry-year water supply options
American River Ecosystem	None	• Improved aquatic and terrestrial habitat in the American River watershed • More water available to meet fishery protection and restoration recovery near-term needs

E. OUTREACH, COMMUNITY INVOLVEMENT AND ACCEPTANCE

This project is consistent with the California Urban Water Conservation Council's Memorandum of Understanding regarding water conservation. It is also consist with the Sacramento Water Forum Agreement and the Regional Water Authority goals and objectives. A letter of support from the Sacramento Water Forum is included in Appendix D.

Outreach efforts support a regional-wide benefit, and will focus on particularly on those customers with irrigation accounts that have received landscape surveys with recommends for irrigation system improvements. Primary telephone contact will be made by the individual water agency staff (or if requested of RWA staff or contractor) to the targeted irrigation customers. To the extent practical, the project will specifically target disadvantaged communities within Sacramento and Placer Counties. There are no tribal entities particularly impacted by this project.

Information on the results of this project will be disseminated through the RWA's public outreach program. RWA is in the process of building a broad public information program and associated schools program, which assist its member agencies through providing materials, speakers, and outreach activities to the general public.

Outreach activities will also include water agency community newsletters publications sent to its customers and Web site development, public meetings, RWA participation at community events, multimedia campaigns, interagency partnerships, corporate environmental fairs, professional trade shows, water conservation workshops and seminars and a speakers bureau.

Summaries of the results and benefits of this project will be developed by RWA staff and made available to RWA agency membership and its member agency customers. Member agencies will advertise this program through additional means such as inserts will be included in billing mailer inserts for those customers with irrigation accounts, newsletters, and agency Web sites.

APPENDIX A

Large Landscape Lists for the Following Agencies:

Carmichael Water District
City of Folsom
City of Sacramento
Fair Oaks Water District
Sacramento County
San Juan Water District

CARMICHAEL WATER DISTRICT
Large Landscapes (> 1 acre)
As of 2/26/02

Carmichael Water District		
Schools	**Parcel Size (Acres)**	**Irrigated Area (Acres)**
Del Campo High School	44.76	23.68
Will Rogers School	20.82	14.69
Barrett	21.90	12.88
Albert Schweitzer	10.18	6.07
Carmichael	19.48	6.42
Deterding	10.00	5.53
Marshall	7.58	3.63
Gibbons Dr. - Bird Sanctuary	3.93	3.93
Starr King	11.23	11.23
Garfield	10.00	4.49
TOTALS - SCHOOLS	**159.88**	**92.55**
Parks	**Parcel Size (Acres)**	**Irrigated Area (Acres)**
Del Campo Park	20.77	16.46
Sutter Ave. Proposed Park	10.44	10.31
Glancy Oaks Park	2.82	2.53
Cardinal Park - Kenneth Ave	7.54	7.16
Carmichael Park - Grant Ave	35.76	25.59
Capra Park - Kenneth Ave	6.63	6.63
Jensen Gardens - Fair Oaks Blvd	6.00	5.46
Suffolk Way - Misson Oaks Park District	4.51	4.51
Thor Way - Misson Oaks Park District	6.00	6.00
La Sierra Community Center - Engle Rd.	35.47	22.51
TOTAL - PARKS	**135.94**	**107.16**
Golf Course	**Parcel Size (Acres)**	**Irrigated Area (Acres)**
Ancil Hoffman	393.97	334.07
TOTAL - GOLF COURSE	**393.97**	**334.07**
LARGE LANDSCAPES TOTALS	**689.79**	**533.78**

City of Folsom Parks

East Area

Parks	Developed Acres	Undeveloped Acres	Facilities	Developed Acres	Open Space	Acres
Folsom City Park	40	4	Folsom Zoo	3	*Tacana Drive	0.5
Rodeo Park	13		Dan Russell Arena	2	Ofria Drive	1.5
Ed Mitchell Park	8		*RG Smith Club House	1	Lexington Hills Wetlands	30
BT Collins	2	6	*Folsom Municipan Center	3.5		
Folsom Lake College	7		*Folsom Library	1		
Folsom Kids Play Park	2					
Cohn Park	6					
Briggs Park	7	3				
Beacon Hills Park	4					
**Keller Mini Park	0.5					
**Chadwick Mini Park	0.5					
**Thorndike Mini Park	0.5					
**Wellfleet Mini Park	0.5					
**Cambridge Mini Park	0.5					
** Prewett Mini Park	0.5					
Total	**92**	**13**	**Total**	**10.5**	**Total**	**32**

*Denotes under landscape contract - Parks & Rec Dept.

**Denotes under landscape & lighting contract - PIP Dept

City of Folsom Parks

West Area

Parks	Developed Acres	Undeveloped Acres	Facilities	Developed Acres	Open Space	Acres
Lew Howard Community Park	10	15	Folsom Rotary Club	1	Hinkle Creek	32
Bud and Artie Davies Park	7	3	Folsom Veterans Halls	1	Willow Springs	30
Lembi Sports Complex	45		Young Wo Cemetery	1.25	Sun Country	4
Mann Park	4.3		Folsom Aquatic Center	4.5		
Ernie Sheldon Youth Sports Complex	8		Natoma Station Learning Center	2		
Amos Catlin Park	9.2	7.2				
John Kemp Community Park	7	26.5				
Livermore Community Park	7	11				
*Hannaford Family Park	1					
*Egloff Family Mini Park	1					
*Garden Club Mini Park	0.5					
*Granit Park	3					
**The Shores Mini Park	0.7					
**Reflections Mini Park	1					
**Steeplechase Chase Mini Park	0.5					
**Natoma Station Mini Park "A"	1.5					
**Natoma Station Mini Park "B"	0.5					
**Windsor Mini Park	2.1					
**Kentfield Mini Park	2.2					
**Cobble Hills Ridge Mini Park	1					
**The Preserves Mini Park	1					
**Levy Park	2					
Total	**115.5**	**62.7**	**Total**	**9.75**	**Total**	**66**

	Developed Park Acres	Undeveloped Park Acres	Facilities	Open Space	Total Maintanined Acreage
Total East and West Areas	**207.5**	**75.7**	**20.25**	**98**	**401.45**
Total Parkland	**283.2**				

*Denotes under landscape contract - Parks & Rec Dept.

**Denotes under landscape & lighting contract - PIP Dept

City of Folsom - Landscape Information

Site	Water Cost
FCUSD DISTRICT OFFICE	$12,339
GRANITE CENTER	$1,050
FCSUD DISTRICT WAREHOUSE	$267
FOLSOM HIGH SCHOOL (PRAIRIE CITY)	$32,884
SUTTER MIDDLE SCHOOL	$15,652
FOLSOM MIDDLE SCHOOL	$14,330
MITCHELL MIDDLE SCHOOL	$3,520
GOLD RIDGE ELEMENTARY	$9,763
FOLSOM HILLS ELEMENTARY	$9,198
NATOMA STATION ELEMENTARY	$6,451
OAK CHAN ELEMENTARY	$8,026
THEODORE JUDAH ELEMENTARY	$7,177
BLANCHE SPRENTZ ELEMENTARY	$4,785
CARL SUNDAHL ELEMENTARY	$3,170

Site	Water (CCF)
GRANITE CENTER	1,440
FCUSD DISTRICT OFFICE	16,821
FCSUD DISTRICT WAREHOUSE	114
FOLSOM HIGH SCHOOL (PRAIRIE CITY)	43,103
SUTTER MIDDLE SCHOOL	21,108
FOLSOM MIDDLE SCHOOL	16,236
MITCHELL MIDDLE SCHOOL	7,602
GOLD RIDGE ELEMENTARY	13,101
NATOMA STATION ELEMENTARY	8,375
FOLSOM HILLS ELEMENTARY	12,183
OAK CHAN ELEMENTARY	10,396
BLANCHE SPRENTZ ELEMENTARY	6,486
THEODORE JUDAH ELEMENTARY	8,616
CARL SUNDAHL ELEMENTARY	4,014

CITY OF SACRAMENTO

DEPARTMENT OF UTILITIES
&
PARKS SERVICES DIVISION

REPORT ON ANALYSIS OF IRRIGATION EFFICIENCY AT EIGHT CITY PARKS

Maddaus Water Management

MARCH 1999

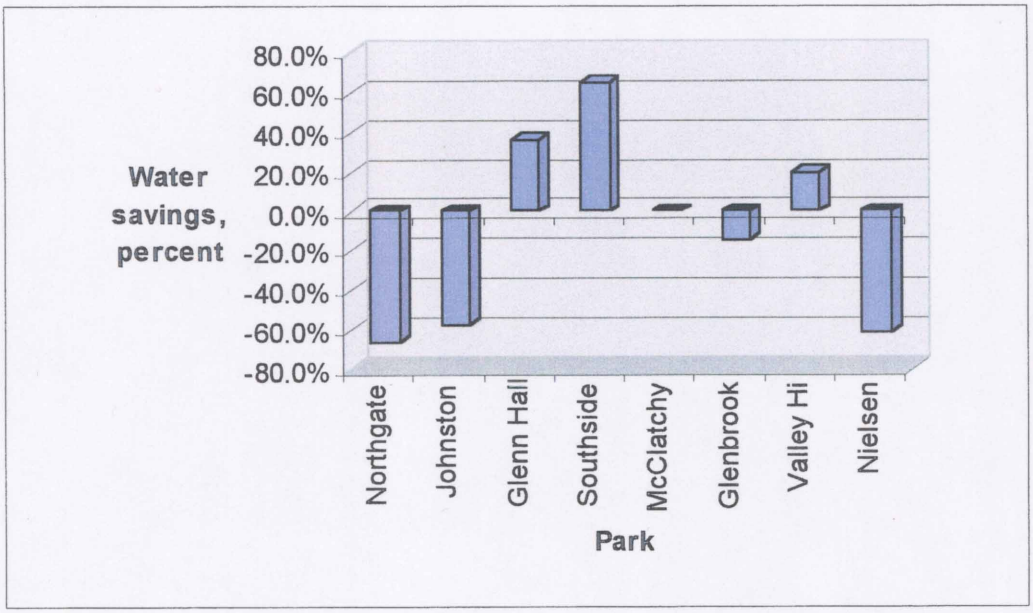
TABLE 3

SUMMARY OF CITY PARK WATER USE EFFICIENCY

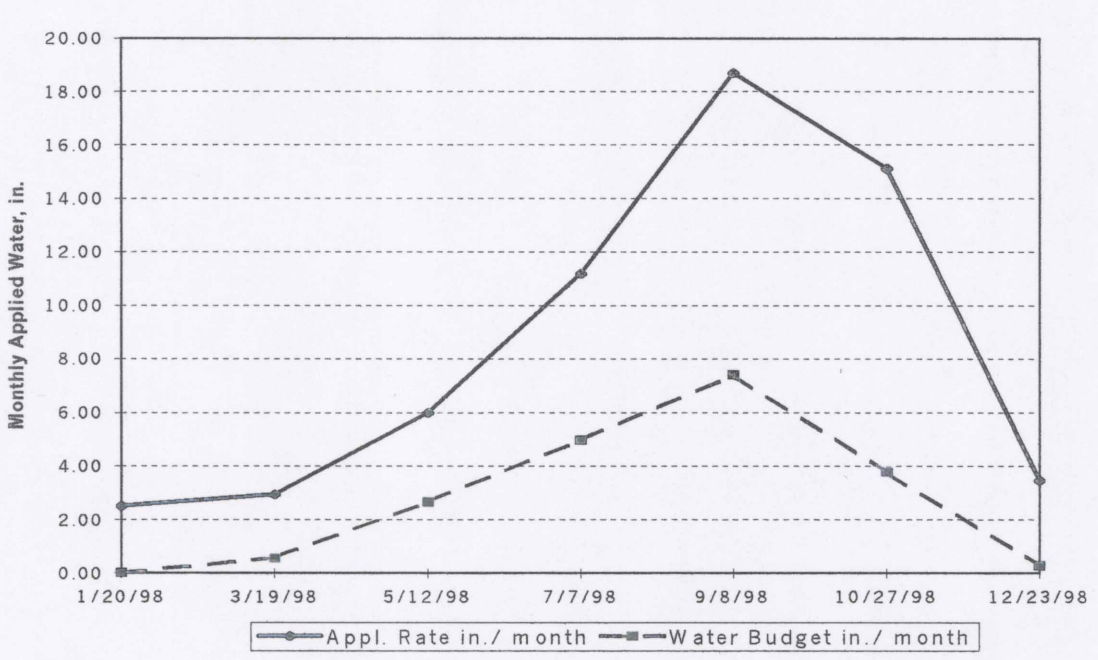
Park	Record Length, months	'97-'98 Total Applied water, in.	'97-'98 Average Applied water, in/month	'97-'98 Total Water Budget, in.	'97-'98 Average Water Budget, in/month	Percent Savings w/Budget
Northgate	8	11.63	1.45	19.38	2.42	-66.7
Johnston	24	31.00	1.29	48.94	2.04	-57.9
Glenn Hall	20	58.4	2.92	37.27	1.86	36.2
Southside	14	59.89	4.28	21.04	1.50	64.9
McClatchy	24	40.95	1.71	41.19	1.72	-0.6
Glenbrook	24	38.88	1.62	44.65	1.86	-14.9
Valley Hi	24	53.68	2.24	43.35	1.81	19.2
Nielsen	22	25.04	1.14	40.45	1.84	-61.5
Average	20	39.93	2.00	37.03	1.85	7.3

FIGURE 1

POTENTIAL WATER SAVINGS AT EIGHT CITY PARKS



SOUTHSIDE PARK, SACRAMENTO



2002 Grant Reporting for
Fair Oaks Water District

No.	Name of School	Address	Affiliate	Parcel Size (Acreage)	Landscape Area (Acreage)	Phone No.
1	Bella Vista High School	8301 Madison Ave	San Juan Unified School District	50.51	16.79	971-5052
2	Earl Legette Elementary	4623 Kenneth Ave	San Juan Unified School District	10.79	3.8	867-2054
3	Fair Oaks Elementary	10700 Fair Oaks Blvd	San Juan Unified School District	7.28	2.04	867-2029
4	Faith Lutheran Elementary	4000 San Juan Avenue	Private	3.69	2	961-4252
5	Freedom Christian Elementary	7736 Sunset Ave	Private	4.44	*2*	962-3247
6	Harry Dewey Elementary	7025 Falcon Rd	San Juan Unified School District	10.8	6.43	867-2020
7	John Holst Elementary	4501 Bannister Rd	San Juan Unified School District	9.41	3.93	867-2035
8	Northridge Elementary	5150 Cocoa Palm Way	San Juan Unified School District	9.94	5.6	867-2066
9	OV 7th Day Adventist	5810 Pecan Ave	Private	2.05	*1*	988-4310
10	Pershing Elementary	9010 Pershing Ave	San Juan Unified School District	10.64	3.36	867-2076
11	Roberts Elementary	5630 Illinois Ave	San Juan Unified School District	11.53	4.3	867-2082
12	Sacramento Waldorf Elementary	3750 Bannister Rd	Private	21	*12*	961-3900
13	Saint Mels Parochial	4745 Pennsylvania Ave	Private	7.56	3	967-2814
14	Twin Lakes Elementary	9380 Twin Lakes Ave	San Juan Unified School District	10.34	5.5	986-2243
15	Victory Christian Elementary	5010 Hazel Ave	Private	4.36	2	967-6565
				TOTAL	**73.75**	

Note: San Juan Unified School District data is 20 years old.

No. 5, 9 & 12 are assumptions

Michael Cobb
mcobb@fowd.com
916-967-5723

FOWD SCHOOLS (15)	**73.75**
FOWD PARKS (8)	**67.97**

2/02

Fair Oaks Water District PARKS & SCHOOLS TOTALS **141.72** **ACRES**

Sacramento County Water Service Area

School Name	House	Street
Elitha Donner Elementary	9461	Soaring Oaks Dr.
Foulks Ranch Elementary	6211	Laguna Park Dr.
Harriet G. Eddy Middle School	9329	Soaring Oaks Dr.
John Ehrhardt Elementary	8900	Old Creek Dr.
Joseph Sims Elementary	3033	Buckminster Dr.
Stonelake Elementary		
Arthur C. Butler Elementary	9180	Brown Rd.
Maeola Beitzel Elementary	8140	Caymus Dr.
Raymond Case Elementary	8565	Shasta Lily Dr.
T.R. Smedbury Middle School	8239	Kingsbridge Dr.
Arden Middle School	1886	Arden Way
Mariemont Elementary School	1401	Corta Way
Sierra Oaks Elementary	171	Mills Road
Kitty Hawk Elementary		Aubergine Way
Mather Heights Elementary		School Rd.

SAN JUAN WATER DISTRICT
Listing of Schools and Parks in Retail Service Area with large landscapes

2/22/02

	# of meters	Total Parcel Size (acres)	Total Irrigated Area (sq. ft.)	Consumption (unit of measure = ccf)					
				Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01
Oaks Hills Elementary & Ridgeview Elementary Schools	1	21.2	198,868	658	1663	2092	3156	1480	1563
Greenhills School	1	Unknown	232,378	100	1195	1583	2067	888	1017
Private School on Lake Natoma	1	Unknown	135,081	451	1152	1889	1763	2144	1648
				137	324	411	803	672	505
Eureka Elementary School	2	12.92	146,364	229	811	934	776	1470	616
				196	422	666	725	790	612
Cavitt Junior High	2	22.8	324,433	407	1248	1668	1802	2962	544
				Bad Data	531	531	531	451	440
				Not Avail	Not Avail	Not Avail	53	56	38
Casa Roble High School	3	29.81	856,579	114	430	489	988	403	326
Treelake Park	1	7.8	unknown	219	1249	1603	1525	1828	693
Hillsborough Park	1	10.0 (est)	unknown	592	1305	2459	1818	2179	1211
Davis Park	1	13.8	unknown	381	1354	2689	2189	3152	1254

		3484	11684	17014	18196	18475	10467		
Average Area for 5 sites	207,425								
Sum Water Consumption for 5 sites (ccf)		2178	6815	9243	11092	10406	6505		
Ave Water Use per area for 5 sites (inches)		2.520046	7.885267	10.69457	12.83395	12.04022	7.52658313	7.526583	total
Reference Eto For Sacramento Zone 14		5.1	6.82	7.8	8.68	7.75	5.7	4.03	40.78
% above Eto		49%	116%	137%	148%	155%	132%	187%	
difference			1.065267	2.894575	4.153952	4.290219	1.82658313	3.496583	17.72718

Summer month average = 15167.2 0.30
Ave. Summer Consumption (acre-ft per month) = 34.8191

APPENDIX B

Resume

CITY OF FOLSOM
50 Natoma Street
Folsom, California 95630

Public Works Department
Administration/Engineering

Resume:

Timothy D. Crowley
Water Management Coordinator
City of Folsom
Folsom , CA

Education:

B.S. – Business Administration
A.S. - Ornamental Horticulture
Extensive additional college coursework in the Biological Sciences, Horticulture, and Education.

Experience:

Over 25 years of experience in the landscape industry. As the owner/operator of a professional landscape company for 17 years, I have been involved in all aspects of the Green Industry. In addition to performing routine landscape services, I have been involved with site management consultation. As Project Coordinator for the Northridge Gardens, a local demonstration garden, I worked with the site development team, maufacturers representatives, and contractors to develop a public garden dedicated to water efficient landscaping techniques.

Past experience teaching and coordinating several horticulture classes on a variety of subjects with local community colleges and the University of California Extension and Cooperative Extension. Numerous presentations with local professional associations on issues involved with tree selection and care, lawn care, and water conservation.

Currently working with the City of Folsom to coordinate the water conservation program,and compliance with the Best Management Practices being implemented locally and statewide. In addition to conducting field surveys of residential and commercial landscape irrigation systems, the program is being developed to include comprehensive educational programs for City residents.

Licensing and Certification:

Ca. Landscape Contractor (C-27)
Certified Landcsape Irrigation Auditor (IA)
Conservation Practitioner Level I (AWWA)
Ca. Community College Instructor Credential
Certified Arborist (ISA)
Ca. Pest Control Adviser / Qualified Applicator Licenses (DPR)

CHARLES W. PIKE

Regional Water Efficiency Manager
Regional Water Authority

5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

916-967-7692
e-mail: cpike@concourse.net

Summary: Water Use Efficiency Professional with 15 years in the California Department of Water Resources. Now guiding the 18 water suppliers of the Regional Water Authority to implement the water efficiency plans of the Water Forum Agreement.

Experience:

Regional Water Authority, Regional Water Efficiency Manager
Represent 18 water suppliers in the Water Forum Successor Effort negotiating team. Established the Regional Water Efficiency Program with a budget of $400,000 to satisfy BMPs of the Water Forum Agreement and the USBR CVPIA contractors.

San Juan Water District, Water Efficiency Manager
Coordinate the water efficiency programs of four water suppliers served by the San Juan Wholesale Agency. Provided major support to the spring 2001 DWR Water and Energy Efficiency workshops for water suppliers throughout California.

California Department of Water Resources, Water Use Efficiency Office
Created the Water Conservation Practitioner Certification standards and examination with the American Water Works Association (AWWA) Conservation Certification committee. Developed and taught Water Conservation Training classes presented to prepare water utility operators, planners and consultants for the certification exams. Class topics included: landscape irrigation, California hydrology, residential water uses; distribution system water loss reduction; and water efficiency programs for businesses.

Administered a $1.9 million leak detection grant program to 57 local agencies. Highly successful, the program found 3,300 leaks worth $4,300,000. Analyzed water supply savings from meter calibration, leak detection, and repairs

BMP 9 Project Advisory Committee Chairperson developing the new California Urban Water Conservation Council guidebook for utilities implementing the Best Management Practices for Commercial, Industrial, and Institutional water users.

Developed training seminars presented to more than 500 California utilities to reduce their distribution system losses. Taught Water Audit and Leak Detection Workshops for DWR & Cal-Nevada Section AWWA.

Created and managed the Industrial Water Conservation Program to reduce loads of water and wastewater utilities in California. Leverage resources with other agencies to finance projects.

As a Resource Agency Fellow with U. C. Davis, surveyed the California food processing industry to identify market transformation techniques most acceptable to improve energy efficiency, water efficiency, and pollution prevention. The results guided the California Energy Commission study *Energy Management in the Food Processing Industry*.

Secured a $100,000 U.S. EPA grant to identify the types of businesses with the greatest potential for water efficiency improvements and quantify the potential savings in five California metropolitan areas and five other U.S. cities.

Leveraged resources to established the "Government, Utilities, Private Industry Partnership Project" with the City of Ventura. This partnership with Southern California Edison, SoCAL Gas, the City of Ventura and four businesses identified cost effective, site-specific energy and water efficiency improvements. This project was so well accepted by local businesses that the city funded the project to serve additional businesses for two more years without state money.

Acquired a $65,000 US EPA grant to create two books now distributed nationally. *Helping Businesses Manage Water Use - A Guide for Water Utilities* and *Water Efficiency Guide for Business Managers and Facility Engineers*.

Presented workshops, classes and technical talks to such audiences as: World Energy Engineering Congress, American Institute of Plant Engineers, California Institute of Food and Agricultural Research, Pajaro Basin Food Processors, AWWA, WEF, the Texas Special Committee on the Edwards Aquifer, Cooling Tower Institute, and University of Houston.

Evaluated the impacts on land use, water quality, and the timber related economy of including 1,200 miles of California rivers in the National Wild and Scenic Rivers System. Prepared the associated environmental impact statement and environmental impact reports.

Bechtel Corporation Electrical Engineer
Design electrical circuits for nuclear power generating plant. Monitor installation of electrical circuits at a coal fired power-generating plant in Missouri.

Niagara Mohawk Power Corporation Electrical Engineer 1966-1969
Forecast load growth for urban distribution circuits and substations. Design high voltage transmission lines and distribution structures.

AWARDS AND COMMENDATIONS

Selected as Resource Agency Fellow with U. C. Davis	July 1996
U. S. Dept. of Energy, Performance Award	May 1994
City of Ventura, Commendation	October 1993
Outstanding Professional Accomplishment and State Sustained Superior Accomplishment Award	November 1990 & December 2000
Cal-Nevada Section AWWA Chairman's Award	October 1987
DWR Unit Citation	May 1984
Governor of California, Commendation	February 1981

PROFESSIONAL ASSOCIATIONS

American Water Works Association
Water Environmental Federation
California Urban Water Conservation Council
Co-chair the Commercial, Industrial, and Institutional Technical Committee

EDUCATION

University of California at Berkeley,	B.S. Forestry
Worcester Polytechnic Institute,	B.S. Electrical Engineering

APPENDIX C

Letters of Commitment from RWA Member Agency Participants (External Cooperators)

CARMICHAEL WATER DISTRICT

7837 FAIR OAKS BOULEVARD
P.O. BOX 929, CARMICHAEL, CALIFORNIA 95609
TELEPHONE (916) 483-2452
FAX (916) 483-5509

February 21, 2002

Ed Winkler
Executive Director
Regional Water Authority
5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

RE: California Department of Water Resources Proposition 13 Grant Applications – Large Landscape Program

Dear Mr. Winkler:

We support this Regional Water Authority grant proposal to the California Department of Water Resources (DWR) under the 2002 Proposition 13 grant solicitation due March 1, 2002.

We agree to participate as an external cooperator as defined by the Department of Water Resources given that our agency will be an indirect recipient of these funds if the grant is awarded to the Regional Water Authority.

We encourage the Department of Water Resources to award this grant to RWA to help reduce the excess amount of water applied to irrigated landscapes in the Sacramento region. In addition to our landscape irrigation reviews (audits) we look forward to providing these hardware incentives to improve irrigation system performance. These grants can be a powerful incentive to many customers who are only now experiencing the conversion from unmetered rates to metered rates.

We look forward to being a partner with the Regional Water Authority on this urban water use efficiency grant program as it further assists our ability to meet our commitments to the Water Forum Agreement.

Sincerely,

LaNell K. Little
General Manager
Carmichael Water District

CITRUS HEIGHTS WATER DISTRICT

6230 Sylvan Road
P.O. Box 286
Citrus Heights
California
95611-0286

phone
916/ 725-6873
fax
916/ 725-0345
website
www.chwd.org

February 20, 2002

Mr. Edward Winkler
Executive Director
Regional Water Authority
5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

Re: California Department of Water Resources Proposition 13 Urban Water Conservation Grant Application for Large Landscape Program

Dear Mr. Winkler:

Citrus Heights Water District supports this Regional Water Authority grant proposal to the California Department of Water Resources (DWR) under the 2002 Proposition 13 Grant Solicitation due March 1, 2002.

The District agrees to participate as an external cooperator as defined by DWR given that the District will be an indirect recipient of these funds if the grant is awarded to the Regional Water Authority (RWA).

The District encourages DWR to award this grant to RWA to help reduce the amount of water applied to irrigated landscapes in the Sacramento region. In addition to our landscape irrigation reviews (audits), we look forward to providing hardware incentives to improve irrigation system performance. This grant can be a powerful incentive to many District customers who will soon be experiencing the conversion from unmetered rates to metered rates.

The District looks forward to being a partner with the Regional Water Authority on this urban water use efficiency grant program as it further assists our ability to meet our commitments to the Sacramento Water Forum Agreement.

Sincerely,

Robert A. Churchill

Robert A. Churchill
General Manager

CITY OF FOLSOM
50 Natoma Street
Folsom, California 95630

Public Works Department
Administration/Engineering

February 21, 2002

Ed Winkler
Executive Director
Regional Water Authority
5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

SUBJECT: **CALIFORNIA DEPARTMENT OF WATER RESOURCES PROPOSITION 13 GRANT APPLICATION- LARGE LANDSCAPE PROGRAM**

Dear Mr. Winkler:

We support this Regional Water Authority grant proposal to the California Department of Water Resources (DWR) under the 2002 Proposition 13 grant solicitation due March 1, 2002.

We agree to participate as an external cooperator as defined by the Department of Water Resources given that our agency will be an indirect recipient of these funds if the grant is awarded to the Regional Water Authority.

We encourage the Department of Water Resources to award this grant to RWA to help reduce the excess amount of water applied to irrigated landscapes in the Sacramento region. In addition to our landscape irrigation reviews (audits) we look forward to provide these hardware incentives to improve irrigation system performance. These grants can be a powerful incentive to many customers who are only now experiencing the conversion from unmetered rates to metered rates.

We look forward to being a partner with the Regional Water Authority on this urban water use efficiency grant program as it further assists our ability to meet our commitments to the Water Forum Agreement.

Sincerely,

Gordon F. Tornberg
Assistant Public Works Director

GFT:la

Department of Utilities
Office of the Director

CITY OF SACRAMENTO
CALIFORNIA

1395 35th Avenue
Sacramento, CA 95822-2911
phone (916) 264-1400
fax (916) 264-1497/1498

February 27, 2002

Ed Winkler
Executive Director
Regional Water Authority
5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

RE: California Department Of Water Resources Proposition 13 Grant Application – Large Landscape Program

Dear Mr. Winkler:

We support this Regional Water Authority grant proposal to the California Department of Water Resources (DWR) under the 2002 Proposition 13 grant solicitation due March 1, 2002.

We agree to participate as an external cooperator as defined by the Department of Water Resources given that our agency will be an indirect recipient of these funds if the grant is awarded to the Regional Water Authority.

We encourage the Department of Water Resources to award this grant to RWA to help reduce the excess amount of water applied to irrigated landscapes in the Sacramento region. In addition to our landscape irrigation reviews (audits) we look forward to provide these hardware incentives to improve irrigation system performance. These grants can be a powerful incentive to many customers who are only now experiencing the conversion from unmetered rates to metered rates.

We look forward to being a partner with the Regional Water Authority on this urban water use efficiency grant program as it further assists our ability to meet our commitments to the Water Forum Agreement.

Sincerely,

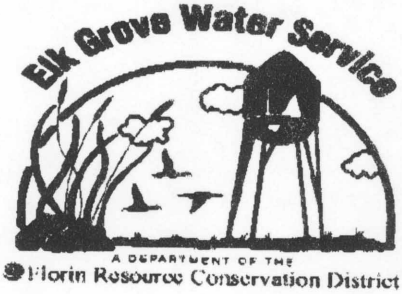
Angela Arden

Water Conservation Administrator
City of Sacramento, Department of Utilities

S/Busi/Water Conservation
Correspondence Folder/2002/02004CF

CITY OF SACRAMENTO
DEPARTMENT
OF UTILITIES

Making a Difference in Your Neighborhood



Ed Winkler
Executive Director
Regional Water Authority
5620 Birdcage Street, Suite 180
Citrus 1-Leights, CA 95610

RE: California Department Of Water Resources Proposition 13 Grant Application- Large Landscape Program

Dear Mr. Winkler:

We support this Regional Water Authority grant proposal to the California Department of Water Resources (DWR) under the 2002 Proposition 13 grant solicitation due March 1, 2002.

We agree to participate as an external cooperator as defined by the Department of Water Resources given that our agency will be an indirect recipient of these funds if the grant is awarded to the Regional Water Authority.

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We look forward to being a partner with the Regional Water Authority on this urban water use efficiency grant program.

Sincerely,

Michael B. Kenny
General Manager

G:\STAFF\Agreements\RWA.rtf

FAIR OAKS
WATER DISTRICT

February 21, 2002

Ed Winkler
Executive Director
Regional Water Authority
5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

RE: California Department Of Water Resources Proposition 13 Grant Application – Large Landscape Program

Dear Mr. Winkler:

We support this Regional Water Authority grant proposal to the California Department of Water Resources (DWR) under the 2002 Proposition 13 grant solicitation due March 1, 2002.

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We look forward to being a partner with the Regional Water Authority on this urban water use efficiency grant program as it further assists our ability to meet our commitments to the Water Forum Agreement.

Sincerely,
FAIR OAKS WATER DISTRICT

Richard D. Plecker
General Manager

10317 Fair Oaks Boulevard
Fair Oaks, CA 95628-7187
Tel: (916) 967-5723
Fax: (916) 967-0153
www.fowd.com

ORANGE VALE WATER COMPANY

9031 CENTRAL AVENUE • POST OFFICE BOX 620800
ORANGEVALE, CALIFORNIA 95662-0800
OFFICE (916) 988-1693 • FAX (916) 988-0627

Sharon L. Wilcox
General Manager/Secretary-Treasurer

February 22, 2002

Mr. Ed Winkler, Executive Director
Regional Water Authority
5620 Birdcage Street, Suite 180
Citrus Heights, California 95610

VIA FACSIMILE – ORIGINAL TO FOLLOW

Re: California Department of Water Resources Proposition 13 Grant Application
Large Landscape Program

Dear Mr. Winkler:

We support this Regional Water Authority grant proposal to the California Department of Water Resources (DWR) under the 2002 Proposition 13 grant solicitation due March 1, 2002.

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We look forward to being a partner with the Regional Water Authority on this urban water use efficiency grant program as it further assists our ability to meet our commitments to the Water Forum Agreement.

Sincerely,

Orange Vale Water Company

Sharon L. Wilcox
General Manager
Secretary Board of Directors

San Juan Water District
P.O. Box 2157 • Granite Bay, California 95746 • 916.791.0115
9935 Auburn Folsom Road • Granite Bay, California 95746
FAX 916.791.7361 • www.sjwd.org

February 21, 2002

Ed Winkler
Executive Director
Regional Water Authority
5620 Birdcage Street, Suite 180
Citrus Heights, CA 95610

RE: California Department Of Water Resources Proposition 13 Grant Application – Large Landscape Program

Dear Mr. Winkler:

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We look forward to being a partner with the Regional Water Authority on this urban water use efficiency grant program as it further assists our ability to meet our commitments to the Water Forum Agreement.

Sincerely,

Shauna Lorance

Assistant General Manager
San Juan Water District

APPENDIX D

Letter of Support

WATER FORUM

660 J STREET, SUITE 260
SACRAMENTO, CA 95814

PHONE 916/264-1999

California Department of Water Resources
Office of Water Use Efficiency
P.O. Box 942836, Sacramento, CA 94236-0001
Attention: Marsha Prillwitz

February 22, 2002

Dear Ms. Prillwitz:

I am writing in support of the Regional Water Authority's (RWA) grant proposals to the Department of Water Resources under the 2002 Proposition 13 grant solicitation.

The Water Forum is a stakeholder organization representing over 40 business, environmental, public and water interests in the region. In April 2000, the stakeholder organizations signed a Memorandum of Understanding to implement the Water Forum Agreement. The stakeholders agreed to a series of actions to achieve the Water Forum's two co-equal objectives:

- Provide a reliable and safe water supply for the region's economic health and planned development to the year 2030; and
- Preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River.

Water use efficiency is an integral element of the Water Forum Agreement. Each water supplier in the region committed to implementing a comprehensive water conservation plan, which is to be fully implemented in 2004. Through their water conservation programs, water purveyors in the region help us meet the two co-equal objectives of the Water Forum Agreement. Leak detection programs, toilet retrofits, and large landscape irrigation system improvements are all part of the Water Forum Agreement conservation plans.

The RWA proposals further the ability of water suppliers to meet their Water Forum Agreement commitments and the CALFED water quality, water supply and environmental restoration objectives.

The Water Forum encourages the Department of Water Resources to support RWA's water use efficiency grant proposals.

Sincerely,

Leo Winternitz

Leo Winternitz
Executive Director